

ATARI

GRAPHICS COMPOSER

Reference Manual

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INTRODUCTION

1. Overview

Graphics Composer is a software system that allows quick entry of graphics information on the Atari High-Resolution (High-Res) graphics screen, Medium-Resolution (Med-Res) screen, and the Atari Graphics "Players".

Just move the joystick to draw on the screen. Then, you can fill in closed areas with color, change the background or drawing colors, load or save your pictures to disk or cassette, draw with a brush, add text to a High-Res picture, easily draw geometric shapes and more. Use the "player" microscope to easily create players. Use these players in your own programs or plot them on the High-Res screen. Also create players from the High-Res screen.

Graphics Composer commands are usually one letter mnemonics entered by pressing the appropriate key on the Atari Personal Computer keyboard. Prompt messages are liberally embedded within the program to guide the user throughout all drawing phases. While the software is easy to use, it should be remembered that it is a tool. A thorough reading of the following document, and a little practice and experimentation, is required to become familiar with all it's functions.

2. Owner Registration Card

Please take time to fill out the Owner Registration Card. We are constantly developing new products for the Atari Personal Computer and will notify you as they become available. Please let us know if you have any additional requirements. We work closely with our customers in an effort to provide the most useful and needed software.

3. System Requirements

The Graphics Composer system requires an Atari Personal Computer with a minimum of 32K of RAM, an 810 disk drive OR a 410 program recorder, a BASIC language cartridge and one Atari joystick. Certain portions of the Graphics Composer will also allow the use of a second joystick or paddles.

SYSTEM STARTUP

1. Connecting the Joysticks/Paddles

The joystick must be plugged into the left most controller jack (jack #1) on the front of the Atari Personal Computer. The second joystick (when used) must be plugged into controller jack #2. If paddles are used, they must be plugged into jack #1 in place of the joystick.

2. Disk Based System

First, turn ON the Atari 810 disk drive and insure computer power is OFF. Insert the Graphics Composer diskette into the drive and turn ON computer power. After several seconds the following menu will appear:

```
****GRAPHICS COMPOSER****  
Version 1.0  
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1. DRAW-HIGH RES MODE
2. DRAW-MEDIUM RES MODE
3. ADD TEXT TO HIGH RES PICTURE
4. CREATE/MODIFY 'PLAYERS'
5. RUN GEO-MAKER
6. DISPLAY 'PLAYER' DATA
7. CATALOG PICTURES ON DISK
8. EXIT TO DOS
9. QUIT - END SESSION

PICK OPTION BY NUMBER

To select any item on the menu just press it's associated number. To return to this menu from any program, just press "Q".

3. Cassette Based System

The Graphics Composer programs are stored on the cassette in the following order:

Side I

1. Intro (Machine Language Routines)
2. DRAW-HIGH-RES MODE
3. DRAW-MEDIUM-RES MODE
4. GEO-MAKER
5. Create/Modify "PLAYERS"
6. Display "PLAYER" Data
7. BASIC PICTURE LOADER

Side II

1. Textwriter Intro (Textwriter Machine Language Routines)
2. ADD TEXT TO HIGH-RES PICTURE (Textwriter)
3. Greek Text Font
4. Stylish Text Font
5. Computer Text Font

Loading Programs Side I:

Prior to loading programs 2,3,4 and 5, the Intro program (program 1) must be loaded (CLOAD) and then RUN. Then advance the tape to the desired program, press play on the program recorder and finally press RETURN. When READY appears, type RUN RETURN to begin.

To load program 6 just advance the tape to the beginning of the program and CLOAD as usual. When READY appears, type RUN RETURN to begin.

To load program 7, just advance the tape to the beginning of the program and CLOAD as usual. When READY appears, you are ready to add your own program to it.

It is recommended that you separate each program (2,3,4,5,6,7) to it's own cassette. For programs 2,3,4 and 5 just CLOAD the Intro and CSAVE the Intro onto a new cassette. Then CLOAD program 2 from the GRAPHICS COMPOSER Cassette and CSAVE it onto the new cassette immediately following the Intro program. Repeat the above with new cassettes for programs 3,4 and 5. Programs 6 and 7 do not require the Intro program. Just CLOAD each and CSAVE it onto it's own cassette. Now when you wish to load a particular program, just rewind and CLOAD, no need to worry about Program Recorder Counter numbers, etc. Also it is recommended that you keep a separate cassette just for High-Res pictures and another just for Medium-Res pictures.

Loading Programs Side II:

To load the textwriter program, rewind Side II of the tape to the beginning, CLOAD and RUN the textwriter INTRO program. Insuring the PLAY button is still down, press RETURN when instructed. When READY appears, type RUN RETURN to begin. The last three items on Side II are alternate text fonts which may be loaded using the "F" command in the textwriter program.

SOFTWARE

A. MAIN SOFTWARE

1. DRAW - HIGH RESOLUTION MODE

High-Res drawing provides a horizontal (X) resolution of 320 points by a vertical (Y) resolution of 160 points (split screen) or 192 points (full screen). Initially, the system is set in split screen mode to allow for display of prompt messages at the bottom of the screen.

Three drawing and fill colors are available. Text may easily be added to a High-Res picture by calling the textwriter program.

The main commands available are:

P	POINT Cursor
Space Bar	Draw straight line from last plotted point
Ø	Draw in background color (Ø)
1	Draw in foreground color (1)
2	Draw in color (2)
3	Draw in color (3)
X	Draw with X fixed
Y	Draw with Y fixed
B	Change BACKGROUND color (Ø)
C	Change foreground COLOR (1)
E	ERASE screen
R	REVERSE picture
/	Change from full-to-split or split-to-full screen
-	Change from JOYSTICKS to PADDLES and vice versa
N	NORMAL - returns color, etc. to default
F	FILL closed figure with color
Z	Draw/Edit with Paint Brush
A	Draw with AIR BRUSH
D	DISK DIRECTORY - lists High-Res pictures (Disk version only)
L	LOAD picture from Disk/Cassette
S	SAVE picture to Disk/Cassette
G	Run Medium-Res GRAPHICS drawing (Disk version only)
I	Run GEO-MAKER (Disk version only)
H	HELP - List of command letters
Q	Quit - End session
T	Run TEXTWRITER (Disk version only)
*	Enter player graphics

The Player Graphics Commands are:

L	LOAD player from Disk/Cassette
S	SAVE player to Disk/Cassette
D	DISK DIRECTORY - lists players on Disk (Disk version only)
C	CREATE player from screen
P	PRINT player on screen
RETURN	RETURN to main drawing

Each of the above functions is activated by pressing the single letter listed above. Below is a detailed description of each of the commands.

MAIN COMMANDS:

"P" POINT CURSOR - This command will cause the flashing cursor to appear and the current X and Y coordinates to be displayed. Moving the joystick (or paddles) will now move the cursor without drawing. Hold down the Joystick FIRE button to draw. Release to reposition without drawing. When using paddles, press either FIRE button once and release to begin drawing and then press again and release to stop drawing. At any time you may press a Color number (0,1,2,3) to change the drawing color. After selecting a new color, you will return to the "P" mode. Again just press the FIRE button to start drawing in the new color. The "P" mode is also used to draw a straight line (in foreground color #1 only) between the last point plotted and the current cursor position each time the "Space Bar" is pressed.

"0" COLOR - Selects drawing to be in the background color. If you are drawing over background areas, nothing will appear to happen, because you are drawing background on background. As you move over areas already drawn in another color, they will turn to background. The color and intensity of the background may be changed with the "B" command.

"1" COLOR - Selects drawing to be in White (foreground) color. This color may be changed with the "C" command.

"2" COLOR - Selects drawing to be in color 2. Generally this is an Orange/Brown color. The user has no direct control over this color.

"3" COLOR - Selects drawing to be in color 3. Generally this is a Blue color. The user has no direct control over this color.

"X" DRAW WITH FIXED X - This function makes it easy for you to draw perfectly straight vertical lines. First position the flashing cursor at the start of the line. Press "X" and then draw your line. The color will be background if the last drawn color was background (0) and foreground if the last drawn color was 1,2 or 3. This command is exited by selecting any other command.

"Y" DRAW WITH FIXED Y - This function operates similarly to the "X" function detailed above except perfectly straight horizontal lines are produced.

"B" BACKGROUND COLOR - This command allows you to change the color and intensity of the background. Move the Joystick right and left to vary the color and up and down to vary the intensity. When the desired color and intensity are present on the screen, depress RETURN or the Joystick FIRE button. In this way, you can easily choose any of the ATARI'S 128 colors.

"C" DRAWING (FOREGROUND) COLOR - This command allows you to change the intensity of the drawing (foreground). The color of the drawing is determined by the color of the background. Only the intensity can be varied. Move the Joystick up and down to vary it. When the desired effect is present on the screen, depress RETURN or the Joystick FIRE button.

"E" ERASE SCREEN - This command does exactly what you would expect - erase the screen. Because the "E" key could accidentally be pressed, wiping out your picture, a confirm prompt is added. Answer it "Y" and the screen will self-destruct.

"R" REVERSE PICTURE - Pressing "R" will reverse the entire picture - all dark areas become light and vice versa. Press "R" again to reverse it back.

"/" FULL/SPLIT SCREEN - Permits use of the full screen for drawing. When using this mode some status prompt messages will not be visible. All prompts requiring user input will momentarily switch back to split screen for entry. Pressing "/" again will return to split screen mode.

"-" JOYSTICKS/PADDLES - This command changes control from JOYSTICKS to PADDLES and vice versa. The Joysticks will operate all functions while the Paddles will operate all functions except Player Graphics and colors 2 and 3.

"N" NORMAL MODES - This command returns all drawing functions (color, split/full, etc) to their default or initial settings.

"F" COLOR FILL CLOSED FIGURES - This function permits filling any irregular closed figure with one of four colors. To use this function, first enter the point cursor mode ("P") and position the flashing cursor inside the closed figure. The area to be colored may be white or black and must be bounded by either a SOLID LINE or the screen edge. When coloring a WHITE area the surrounding solid line must be black. When coloring a BLACK area the line must be white. Do not attempt to color areas already colored in blue or orange/brown or to color areas adjacent to blue or orange/brown areas that do not have a solid line separating them from the new area to be colored. Now press "F". Then answer the question "Color Black (B) area or White (W) areas" with B or W. Finally, enter the fill color desired - "0" is black (background), "1" is white (foreground), "2" and "3" are colors that the user has no direct control over.

As you change the background and drawing color/intensities these colors change also. Generally "2" is an Orange/Brown color and "3" is a Blue color.

The fill in routine often leaves areas uncolored within the figure. Position the flashing cursor within such an area and press "F" again. This time merely press the space bar to continue fill in the same color as the previous fill.

If you change your mind prior to entering the color number, just press RETURN, the command will be aborted. Otherwise the command will return to the point cursor mode after executing the selection. If you wish to stop the color fill prior to it's completion, just press the "ESC" key.

"Z" DRAW/EDIT WITH PAINT BRUSH - A striking function that imitates the action of a paint brush. Select brush size (0 for a fine to 3 for a broad), select brush color (0 background, 1 foreground, 2,3) and then paint the screen. This mode is also useful for editing a picture. Again select a brush size (0-3), select color (usually 0 for background) and then move the brush over the undesired areas or lines. This command is exited by selecting any other command.

"A" DRAW WITH AIR BRUSH - A very interesting command which allows you to apply shading to your pictures. First, the question "ON WHITE (W) or ON BLACK (B)" will appear. Answer "W" if you are Air Brushing over a white area. Answer "B" if it is a black area. If you are air brushing over a colored area (orange-brown or blue) and you specify ON WHITE, the shading will be black dots. If you specify ON BLACK, the shading will be white dots. Next the question "Enter percent blue" will appear. Answering 100 will be totally blue, 0 will be totally orange/brown, and 50 will be a mixture which appears white. Experiment with any number between 0 and 100. Next, the question "Enter density (0 to 9)" will appear. Answer 0 for sparse shading, 9 for heavy shading. Finally, move the joystick over the area to be shaded. This command is exited by selecting any command.

"D" DISK DIRECTORY (Disk version only) - This command will list at the bottom of the screen the names of all High-Res pictures currently stored on the disk. To continue press any command letter.

"L" LOAD PICTURE FROM DISK/CASSETTE - In the Disk version, you will be asked for the name (8 characters or less) of a previously saved High-Res picture. There is no need to use quote marks or D: when entering the picture name. You may cancel this command by entering only a RETURN when asked for the name. If you wish to load a picture from cassette (from the disk version) just enter C: for the picture name and press RETURN. In the Cassette version, you will be asked to insert the cassette, cue the tape to the proper picture, press PLAY on the program recorder and then press RETURN. Your picture will then be loaded.

"S" SAVE PICTURE TO DISK/CASSETTE - In the Disk version you will be asked for the name (8characters or less) of your High-Res picture you wish to save. There is no need to use quote marks or D: when entering the picture name. You may cancel this command by entering only a RETURN when asked for the name. If you wish to save a picture to cassette (from disk version) just enter C: for the picture name and press RETURN. In the cassette version you will be asked to insert the picture cassette, cue the tape to the desired starting position, press PLAY and RECORD on the program recorder and then press RETURN. Your picture will then be saved.

"G" MEDIUM-RES GRAPHICS (Disk version only) - This command will call the Medium-Res drawing program. A question regarding whether to save your picture or not will first be asked because changing graphics modes will destroy any picture currently on the screen. Answer "Y" to save your High-Res drawing. Answer "N" to go directly to Med-Res drawing (your High-Res picture will be lost). Answer "RETURN" to abort the command and return to High-Res drawing. Your picture will still be intact.

"I" GEO-MAKER (Disk version only) - This command will transfer control to the Geometric shape maker program. Please refer to Section 5, (page 17), for complete operational details of the Geo- Maker.

"H" HELP - A list of the available commands will be displayed at the bottom of the screen. To continue, press any command letter.

"Q" QUIT - In the Disk version entering this command will exit the High-Res drawing program and return control to the main menu. In the Cassette version, control will be returned back to BASIC and the READY prompt will appear. A question regarding your current picture will be asked. Answer "Y" to save your picture first. Answer "N" to quit directly (your picture will be lost). Answer "RETURN" to abort the command and return to drawing.

"T" TEXTWRITER (Disk version only) - This command will transfer control to the Textwriter program. Please refer to section 3, (page 13), for complete operational details of the textwriter.

"*" PLAYER GRAPHICS - This command will transfer control to the Player Graphics sub-program. It's commands are detailed below.

The Player Missile Graphics Commands are:

"L" LOAD PLAYER FROM DISK/CASSETTE - This command is identical to the "L" (Load picture) command described on page 7 , except that a group of PLAYERS is loaded into player memory.

"S" SAVE PLAYER TO DISK/CASSETTE - This command is identical to the "S" (Save picture) command described above, except that the group of PLAYERS currently in use is saved to the disk/cassette.

"D" PLAYER DISK DIRECTORY (Disk version only) - This command is identical to the "D" command described on page 7 , except all PLAYERS stored on the disk are listed.

"C" CREATE PLAYER - This command will create a PLAYER by copying a part of your High-Res picture. First, answer the question "ENTER PLAYER NUMBER (0,1,2,3)" with the desired number. Remember your old player with that particular number will be destroyed. The other 3 players of the group will NOT be destroyed or harmed in any way. A question will be asked to insure that you wish to destroy the old player. Just press "Y" to confirm. After a slight delay a rectangle will appear. Move the rectangle (using the joystick) to the area of your picture you wish to copy into a PLAYER. Finally just press the FIRE button and wait a few moments. The Player Graphics menu will then reappear. You may now print or save your new player.

"P" PRINT PLAYER - This command will print the selected PLAYER on your High-Res picture. First answer the question "ENTER PLAYER NUMBER (0,1,2,3)?" with the desired player number. Next answer the question "Player Draw Color (1,2,3)?" with 1 for foreground white, 2 for orange/brown and 3 for blue. The color of 2 and 3 may change with your particular Atari computer and television set. Finally move (using the joystick) the player to the desired printing position and press the joystick FIRE button. A few moments later your player will be printed on your picture. You may continue to print this player by moving with the joystick and pressing the FIRE button. To exit (or change players or colors) just press the "*" to return to the Player Graphics Menu. To return to the main drawing section just press RETURN.

"RETURN" - Returns control back to the main drawing program.

2. DRAW - MEDIUM RESOLUTION MODE

Medium-Res drawing provides a horizontal (X) resolution of 160 points by a vertical (Y) resolution of 80 points (split screen) or 96 points (full screen). Initially the system is set in split screen mode to allow for display of prompt messages at the bottom of the screen.

Three drawing and fill colors are available in this mode. Each may independently be set by the user to one of the 128 Atari colors available.

The commands available are:

P	POINT Cursor
Space Bar	Draw straight line from last plotted point
1	Draw in color #1
2	Draw in color #2
3	Draw in color #3
Ø	Draw in background color (Ø)
X	Draw (in last color) with X fixed
Y	Draw (in last color) with Y fixed
B	Change BACKGROUND Color (Ø)
C	Change one of Drawing COLORS (1,2, or 3)
E	ERASE screen
R	REVERSE picture
/	Change from full-to-split or split-to-full screen
-	Change from JOYSTICKS to PADDLES and vice versa
N	NORMAL - returns color, scaling, etc. to default
F	FILL closed figure with color
Z	Draw with Paint Brush
D	DISK DIRECTORY - lists Med-Res pictures (disk version only)
L	LOAD picture from Disk/Cassette
S	SAVE picture to Disk/Cassette
G	Run High-Res GRAPHICS drawing (disk version only)
I	Run GEO-MAKER (disk version only)
H	HELP - list of Command Letters
Q	QUIT - End Session

Each of the above functions is activated by pressing the single letter listed above. Below is a detailed description of each of the commands.

"P" POINT CURSOR - This command is identical to the "P" command described in the High-Res Drawing Section (page 5), except the current color at the point under the flashing cursor is also displayed.

"1" COLOR- Select Color #1 as the drawing color. This color may be changed with the "C" command.

"2" COLOR- Same as "1" above except the drawing color is "2".

"3" COLOR- Same as "1" above except the drawing color is "3".

"Ø" COLOR- See the "Ø"COLOR command description in the High-Res Drawing section (page 5).

"X" DRAW WITH FIXED X - This function makes it easy for you to draw perfectly straight vertical lines. First position the flashing cursor at the start of the line. Press "X" and then draw your line. It will be drawn in the last color used (Ø,1,2 or 3). This command is exited by selecting any other command.

"Y" DRAW WITH FIXED Y - This function operates similarly to the "X" function detailed above except perfectly straight horizontal lines are produced.

"B" BACKGROUND COLOR - See the "B" command description in the High-Res Drawing Section (page 6).

"C" DRAWING COLORS - This command allows you to change the color and intensity of the 3 drawing colors. Select "C" and then press the number of the color you wish to change. Move the Joystick right and left to vary the color and up and down to vary the intensity. When the desired color and intensity is present, depress RETURN or Joystick FIRE button.

"E" ERASE SCREEN - See the "E" command description in the High-Res Drawing Section (page 6).

"R" REVERSE SCREEN - See the "R" command description in the High-Res Drawing Section (page 6).

"/" FULL/SPLIT SCREEN - See the "/" command description in the High-Res Drawing Section (page 6).

"-" JOYSTICK/PADDLES - This command changes control from JOYSTICKS to PADDLES and vice versa. Both Joysticks and Paddles will operate all Medium-Res drawing functions.

"N" NORMAL MODES - See the "N" command description in the High-Res Drawing Section (page 6).

"F" COLOR FILL CLOSED FIGURE - This command is almost identical to the "F" command described in the High-Res Drawing Section (page 6). You can fill in any of the 3 Medium-Res drawing colors (1,2,3). The area to be colored must be BLACK and bounded by a SOLID line of any drawing color (1,2 or 3) and/or the screen edge.

"Z" DRAW/EDIT WITH PAINT BRUSH - This command is almost identical to the "Z" command described in the High-Res Drawing Section (page 7). You can select background color (0) or one of the 3 Medium-Res drawing colors (1,2,3).

"D" DISK DIRECTORY (Disk version only) - This command is identical to the "D" command described in the High-Res Drawing Section (page 7), except all Medium-Res pictures are listed.

"L" LOAD PICTURE FROM DISK/CASSETTE - This command is identical to the "L" command described in the High-Res Drawing Section (page 7), except a Medium-Res picture is loaded.

"S" SAVE PICTURE TO DISK/CASSETTE - This command is identical to the "S" command described in the High-Res Drawing Section (page 8), except a Medium-Res picture is saved.

"G" HIGH-RES GRAPHICS (Disk version only) - This command will call the High-Res drawing program. A question regarding whether to save your picture or not will first be asked because changing graphics modes will destroy any picture currently on the screen. Answer "Y" to save your Medium-Res drawing. Answer "N" to go directly to High-Res drawing (your Medium-Res picture will be lost). Answer "RETURN" to abort the command and return to Medium-Res drawing. Your picture will still be intact.

"I" GEO-MAKER (Disk version only) - See the "I" command description in the High-Res Drawing Section (page 8).

"H" HELP - See the "H" command description in the High-Res Drawing Section (page 8).

"Q" QUIT - See the "Q" command description in the High-Res Drawing Section (page 8).

3. ADD TEXT TO HIGH-RES PICTURE

Text may easily be added to any High-Res picture. Upper/lower case, graphics symbols, numbers, punctuation and the inverse of all of these may be written. The standard ATARI text font may be used or others may be loaded from disk/cassette. COMPUTER, GREEK and STYLISH text fonts are included on the disk/cassette. Other text fonts may be generated by several programs commercially available (such as the IRIDIS Fontedit Program).

The commands available are:

P	POINT Cursor
T	Start writing TEXT
ESC	Stop writing Text
E	ERASE screen
R	REVERSE picture
/	Change from full-to-split or split-to-full screen
-	Change from JOYSTICKS to PADDLES and vice versa
D	DISK DIRECTORY (Disk version only)
L	LOAD picture from disk/cassette
S	SAVE picture to disk/cassette
F	Load New Type FONT from disk/cassette
A	Restore standard ATARI font
G	Run High-Res GRAPHICS Drawing (Disk version only)
H	HELP - List of command letters
Q	QUIT - End session

Each of the above commands is activated by pressing the single letter listed above. Below is a detailed description of each of the commands.

"P" POINT CURSOR - This command will cause the flashing dot to appear on the screen. Using the Joystick or Paddles, position the flashing dot at the position where the start of text is desired. Then press the "T" command described below to start writing text. All other commands described below can be called from the "P" mode.

"T" WRITE TEXT - While in the "P" mode, position the flashing dot at the desired location. Press "T". The dot changes to a box and you are ready to start writing text. All letters (upper and lower case), graphics symbols, numbers/punctuation and inverse of all may be written as usual. Back-space, space bar and RETURN commands will function normally. Other control commands will not function as commands but instead will print on the screen their unique symbol. To move to a different section of the screen, just press the "ESC" key, reposition the flashing dot with the Joystick or Paddles and then again press "T". When finished writing text just press the "ESC" key to return to the "P" point cursor mode. You may then select any command desired.

"ESC" STOP WRITING TEXT - This command will return the user to the point cursor mode. The user may then enter any new command.

"E" ERASE SCREEN - See the "E" command description in the High-Res Drawing Section (page 6).

"R" REVERSE PICTURE - See the "R" command description in the High-Res Drawing Section (page 6).

"/" SPLIT/FULL SCREEN - See the "/" command description in the High-Res Drawing Section (page 6).

"-" JOYSTICK/PADDLES - See the "-" command description in the MED-RES Drawing Section (page 6).

"D" DISK DIRECTORY (disk version only) - This command will list all of the High-Res pictures or Text Fonts stored on the diskette. After pressing "D" - press "P" to display the list of pictures or "F" to display the list of text fonts. To continue press any command letter.

"L" LOAD PICTURE FROM DISK/CASSETTE - See the "L" command description in the High-Res Drawing Section (page 7).

"S" SAVE PICTURE TO DISK/CASSETTE - See the "S" command description in the High-Res Drawing Section (page 8).

"F" LOAD NEW TEXT FONT - Three (plus standard ATARI) text fonts are included on your disk/cassette. COMPUTER is a font with computer style letters and numbers. STYLISH is a stylized version of the standard ATARI text font. GREEK is the standard greek alphabet. All of the above contain upper and lower case as well as the Atari graphics symbols, numbers and punctuation.

"A" ATARI TEXT FONT - This command will restore the standard Atari text font.

"G" HIGH-RES GRAPHICS (Disk version only) - This command will transfer control to the High-Res Graphics Drawing Program.

"H" HELP - See the "H" command description in the High-Res Drawing Section (page 8).

"Q" QUIT - See the "Q" command description in the High-Res Drawing Section (page 8).

4. CREATE/MODIFY "PLAYERS"

This program "Microscopes" two of the Atari graphics players to allow easy creation or modification. A joystick is used to move the microscopes cursor allowing you to easily add to or delete from a player.

The commands available are:

P	POINT Cursor
Ø	Select Player Ø for Microscope
1	Select Player 1 for Microscope
2	Select Player 2 for Microscope
3	Select Player 3 for Microscope
E	ERASE current microscoped player
L	LOAD Players from Disk/Cassette
S	SAVE Players to Disk/Cassette
D	DISK DIRECTORY - lists Players on Disk (Disk version only)
H	HELP - List of command letters
Q	QUIT - End Session

Each of the above functions is activated by pressing the single letter listed above. Below is a detailed description of each of the commands.

"P" POINT CURSOR - The "P" mode is the primary operating mode. Use the joystick to move the cursor on the microscope. Press the FIRE button to invert the current position. If its OFF it will come ON and vice versa. As you change the microscope, your changes will automatically be updated on the actual size player on the right side of the screen.

"Ø" PLAYER - This command loads Player Ø and 1 into the microscope and places the cursor in the center of player Ø.

"1" PLAYER - This command loads Player Ø and 1 into the microscope and places the cursor in the center of player 1.

"2" PLAYER - This command loads Player 2 and 3 into the microscope and places the cursor in the center of player 2.

"3" PLAYER - This command loads Player 2 and 3 into the microscope and places the cursor in the center of player 3.

"E" ERASE - This command will Erase the current player under the microscope. When the erase is complete, control will return to the "P" Point Cursor mode.

"L" LOAD PLAYER FROM DISK/CASSETTE - This command is similar to the "L" command described in the High-Res Drawing Section (page 7) except that the Player Group is loaded into the microscope.

"S" SAVE PLAYER TO DISK/CASSETTE - This command is similar to the "S" command described in the High-Res Drawing Section (page 8), except that the current Player Group is saved to the Disk/Cassette.

"D" DISK DIRECTORY (Disk Version Only) - This command is similar to the "D" command described in the High-Res Drawing Section (page 7) except that all players stored on the disk are listed.

"H" HELP - See the "H" command description in the High-Res Drawing Section (page 8).

"Q" QUIT - In the Disk Version entering this command will exit this program and return control to the main menu. In the cassette version, control will be returned to BASIC and the READY prompt will appear. A question regarding your current Players will be asked. Answer "Y" to save your Players first. Answer "N" to quit directly (your Players will be lost). Answer "RETURN" to abort the command and return to the microscope.

5. RUN GEO-MAKER

GEO-MAKER allows you to easily draw perfect geometric shapes on your High-Res and Medium-Res pictures. The geometric shapes available are: square, circle, triangle, parallelogram, arc and multi sided closed figure. In addition, this program will also draw Moire' patterns which may be controlled from one or two joysticks.

The commands available are:

C	Circle
U	Square
P	Parallelogram
M	Multi-sided closed figure
T	Triangle
A	Arc
Ø	Draw subsequent shapes in background color
1	Draw subsequent shapes in color 1
2	Draw subsequent shapes in color 2 (Medium-Res only)
3	Draw subsequent shapes in color 3 (Medium-Res only)
Q	Quit - End Session
E	Erase screen
F	Moire' Patterns
-	Change from JOYSTICKS to PADDLES and vice versa
H	Help - list of command letters
L	Load picture from Disk/Cassette
S	Save picture to Disk/Cassette
D	Disk Directory - lists pictures (Disk version only)
G	Run appropriate Graphics drawing

Each of the above functions is activated by pressing the single letter listed above. Below is a detailed description of each of the commands.

"C" CIRCLE - This command allows you to easily draw a perfect circle. After pressing "C", move the cursor to the desired center of the circle and press RETURN or the joystick FIRE button. Then move the cursor to the circle edge and again press RETURN or the FIRE button. Your perfect circle will then be drawn.

"U" SQUARE - This command allows you to easily draw a square. After pressing "U", move the cursor to one of the corners and press RETURN or the FIRE button. Then move the cursor to the diagonally opposite corner and again press RETURN or the FIRE button. Your square will then be drawn.

"P" PARALLELOGRAM - This command allows you to easily draw a parallelogram. After pressing the "P", move the cursor to one corner of the parallelogram and press RETURN or the FIRE button. Repeat for two more corners of the Parallelogram.

"M" MULTI-SIDED CLOSED FIGURE - This command allows you to easily draw a Polygon with any number of desired sides. After pressing "M" answer the question "number of sides" with the desired number followed by a RETURN. Then move the cursor to the center of the polygon and press RETURN or the FIRE button. Finally move the cursor to the edge (also the starting location) of the polygon and again press RETURN or the FIRE button.

"T" TRIANGLE - This command allows you to easily draw a triangle. After pressing "T", move the cursor to one corner of the desired triangle and press RETURN or the FIRE button. Repeat for the other two corners.

"A" ARC - This command allows you to draw a perfect arc through any three points. After pressing "A", move the cursor to the first point and press RETURN or the FIRE button. Repeat for the second and third points on the arc.

"Ø" COLOR - Draw subsequent shapes in the background color.

"1" COLOR - Draw subsequent shapes in color 1.

"2" COLOR (Medium-Res only) - Draw subsequent shapes in color 2.

"3" COLOR (Medium-Res only) - Draw subsequent shapes in color 3.

"Q" QUIT - See the "Q" command description in the High-Res Drawing Section (page 8).

"E" ERASE SCREEN - See the "E" command description in the High-Res Drawing Section (page 6).

"F" MOIRÉ PATTERNS - This command allows you to control Moiré patterns on the screen with one or two joysticks. After pressing "F", answer the question "ENTER STEP SIZE?" with the step number desired (usually 1 to 5). Next, answer the question "DO YOU WISH TO SET WINDOW LIMITS (Y/N)?" with "Y" if you wish to restrict the pattern to a certain area of the screen and "N" if you wish to be able to cover the entire screen. Next, move the cursor to the desired origin and press the FIRE button. Finally move the cursor to the desired starting point, press the FIRE button and begin moving the joystick #1 to draw the Moiré patterns. If a second joystick is plugged into controller jack #2 it will move the origin. To exit this command just press the RETURN key.

"-" JOYSTICK/PADDLES - This command changes control of the screen from JOYSTICK to PADDLES and vice versa. The Joystick will operate all functions while the Paddles will operate all functions except the Moire' pattern drawing. Joysticks are mandatory for Moire' pattern drawing.

"H" HELP - See the "H" command description in the High-Res Drawing Section (page 8).

"L" LOAD PICTURE FROM DISK/CASSETTE - This command is identical to the "L" command described in the High-Res Drawing Section (page 7) except a Medium-Res picture is loaded if the current screen is Medium-Res (mode 7) and a High-Res picture is loaded if the current screen is High-Res (mode 8).

"S" SAVE PICTURE TO DISK/CASSETTE - This command is identical to the "S" command described in the High-Res Drawing Section (page 8) except a Medium-Res picture is saved if the current screen is Medium-Res (mode 7) and a High-Res picture is saved if the current screen is High-Res (mode 8).

"D" DISK DIRECTORY (Disk version only) - This command will list the names of all pictures stored on the disk for the current screen mode (High-Res or Medium-Res).

"G" GRAPHICS (Disk version only) - This command will transfer control to the drawing programs.

6. DISPLAY PLAYER DATA

This utility program allows you to easily display the decimal value of each line of the desired player. The player must be stored on the disk or cassette in the Graphics Composer format. In addition, this program requires PLAYERS stored on the disk to have the standard GRAPHICS COMPOSER extension of ".PM1". This information may be displayed on the screen or sent to both the screen and a printer. It is displayed in DATA statement format to facilitate easy entry into your own BASIC programs. Just press BREAK when the desired portion of the PLAYER is on the screen and then type NEW. Now move the cursor up to the topmost desired line and press RETURN. Continue positioning the cursor and pressing RETURN on each desired Data line. When finished type LIST and you will see a small program of DATA statements consisting of your PLAYER data. Now just SAVE or LIST it to Disk/Cassette. Refer to Appendix B for a technical description of Player-Missile graphics.

7. CATALOG PICTURES ON DISK (Disk Version Only)

This utility will list the names of all pictures stored on the disk. Any alternate text fonts (for use with the Textwriter program) stored on the disk will also be listed. The menu will return after any key is pressed.

8. EXIT TO DOS (Disk Version Only)

This command will load the DOS Menu. To return to the GRAPHICS COMPOSER, select "B" on the DOS Menu and then type RUN "D:DRAW" (RETURN).

9. QUIT - END SESSION (Disk Version Only)

This command returns control back to BASIC.

B. ADDITIONAL SOFTWARE - BASIC PICTURE LOADER

This utility program allows you to display pictures drawn with the Graphics Composer from your own Basic programs. This utility is simply added to the end of your own program.

The name of this utility is PICPROG. It consists of lines 0 and 30000 through 30160. Your own Basic program may use any lines except these. PICPROG has been stored on the diskette in two different formats. "PICPROG.BAS" is stored on the diskette in standard SAVE format. It must be loaded (using LOAD "D:PICPROG.BAS".) before you begin typing in your program. "PICPROG.ENT" is stored in LIST format. It may be added to an existing program using ENTER "D:PICPROG.ENT". Just make sure your program does not have line 0 or lines 30000 through 30160 because they will be deleted when "PICPROG.ENT" is entered. PICPROG has been stored on the cassette in only CLOAD format. You must CLOAD it prior to entering your own program. When finished, just CSAVE your entire new program.

To display a picture from your program is now very simple. First, set the proper GRAPHICS mode for your picture (if not already in that particular graphics mode). Next, to load a picture from Disk, set FS\$ equal to the name of your picture. (Don't forget to include the D: and the extension of .PI7 for Medium-Res Mode 7 and .PI8 for High-Res Mode 8 pictures). To load a picture from cassette, set FS\$ = "C:". Finally GOSUB 30000.

An example is:

```
100 GRAPHICS 8: FS$ = "D:USMAP3.PI8":GOSUB 30000      (Picture on Disk)
100 GRAPHICS 8: FS$ = "C:":GOSUB 30000                (Picture on Cassette)
```

If you were already in Graphics Mode 8 it would simplify to just:

```
100 FS$="D:USMAP3.PI8":GOSUB 30000                    (Picture on Disk)
100 FS$="C:":GOSUB 30000                              (Picture on Cassette)
```

This would provide a SPLIT screen picture so that you could display TEXT at the bottom. If you wished a FULL screen picture just add 16 to the GRAPHICS command.

An example is:

```
100 GRAPHICS 8+16:FS$="D:USMAP3.PI8":GOSUB 30000      (Picture on Disk)
100 GRAPHICS 8+16:FS$="C:":GOSUB 30000                (Picture on Cassette)
```

TIPS AND HINTS

1. When working on a large "masterwork", occasionally save to disk/cassette the partially completed picture with the "S" command. You never know what evil lurks.
2. Keep a diskette/cassette just for pictures. After initializing the diskette, just change the standard diskette for the picture diskette when saving and recalling. A diskette will hold about 10 High-Res pictures. After this the I/O Error #162 will be seen.
3. To delete a picture stored on the disk use the normal DOS "D" command. High-Res and Medium-Res pictures will have an extension of ".PI8" and ".PI7" respectively. Be sure to add the extension when using DOS commands.
4. Try your best to NEVER press SYSTEM RESET. If you accidentally do, there is still hope. Type RUN and your picture should return with minor damage toward the bottom of the screen. You will then have to edit/clean-up your picture.

GRAPHICS COMPOSER MEMORY MAP - DISK VERSION

RAM HIGH MEMORY

HIGH MEM-4K

HIGH MEM-8K

HIGH MEM-10K

Unused -
size depends on
amount of RAM

\$4C00 19456

\$4800 18432

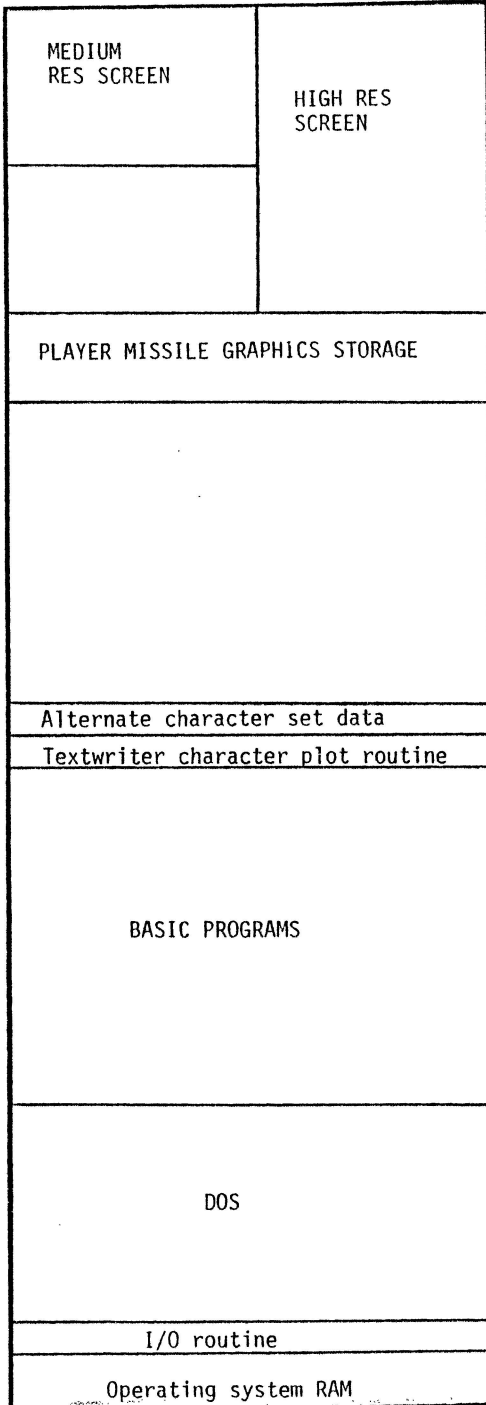
\$4600 17920

\$1CFC 7420

\$700 1791

\$600 1536

\$0 0



GRAPHICS COMPOSER MEMORY MAP - CASSETTE VERSION

RAM HIGH MEMORY

HIGH MEM-4K

HIGH MEM-8K

HIGH MEM-10K

Unused -
size depends on
amount of RAM

\$3500 13568

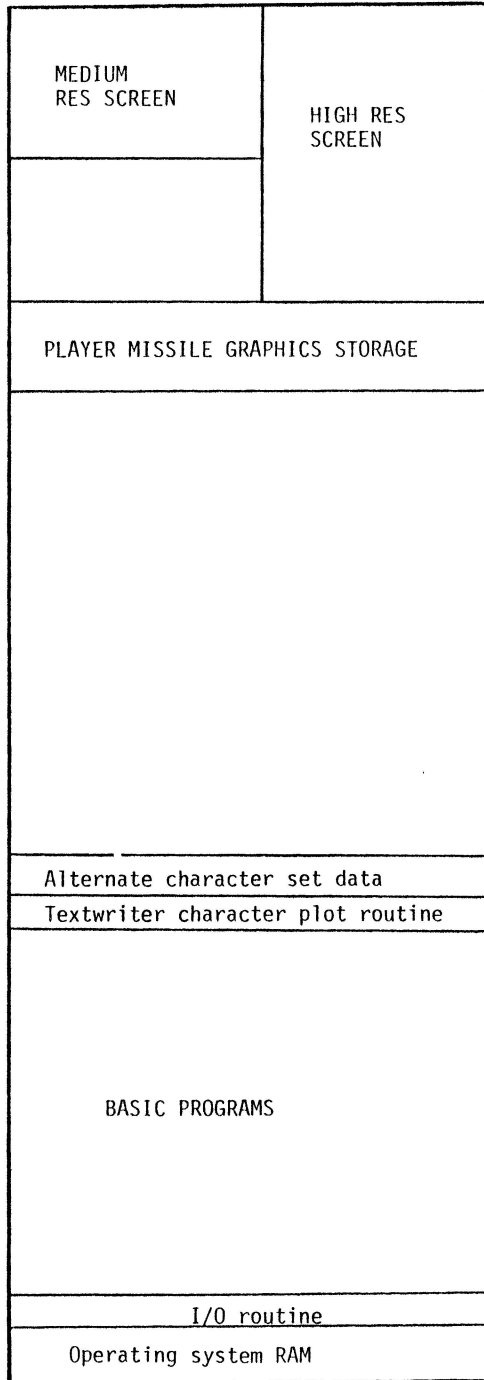
\$3100 12544

\$3000 12288

\$700 1791

\$600 1536

\$0 0



APPENDIX A

TECHNICAL DESCRIPTION OF GRAPHICS COMPOSER PICTURE STORAGE

The Graphics Composer pictures are stored on the Disk/Cassette as follow:

HIGH-RES PICTURE (.PI8)		MED-RES PICTURE (.PI7)	
BYTE # (Decimal)	Description	BYTE # (Decimal)	Description
1	Address Low*	1	Address Low*
2	Address High	2	Address High
3	Length Low**	3	Length Low**
4	Length High	4	Length High
5	DINT (#1)***	5	Color #0***
6	BINT (#2)	6	Inten #0
7	BCOL (#2)	7	Color #1
8	-	8	Inten #1
9	-	9	Color #2
10	-	10	Inten #2
11	-	11	Color #4
12	-	12	Inten #4
13	-	13	-
14	-	14	-
15-7694	Picture Data	15-3854	Picture Data

- = Currently not used.

* = Screen start address minus 10 when picture was saved.

** = Length of Picture File including Color register information but excluding 4 byte address and length header (bytes #1-4 above).

*** = Color Register information (numbers denote color register).

PLAYER-MISSILE GRAPHICS

A list of important Atari memory locations for Player Missile Graphics is given on the following page (Table 1).

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TABLE 1 - Player Missile Memory Locations

<u>Address Decimal</u>	<u>Description</u>
559	PM Single Line Resolution=62, Double Line Res=46,DISABLE=34
704	Color Player-Missile 0 (0-255)
705	Color Player-Missile 1 (0-255)
706	Color Player-Missile 2 (0-255)
707	Color Player-Missile 3 (0-255)
53248	Horizontal Position Player 0 (0-255)
53249	Horizontal Position Player 1 (0-255)
53250	Horizontal Position Player 2 (0-255)
53251	Horizontal Position Player 3 (0-255)
53252	Horizontal Position Missile 0 (0-255)
53253	Horizontal Position Missile 1 (0-255)
53254	Horizontal Position Missile 2 (0-255)
53255	Horizontal Position Missile 3 (0-255)
53256	Size Player 0; Normal=0, Double=1, Quadruple=3
53257	Size Player 1; Normal=0, Double=1, Quadruple=3
53258	Size Player 2; Normal=0, Double=1, Quadruple=3
53259	Size Player 3; Normal=0, Double=1, Quadruple=3
53275	Player/Playfield/Background Priorities
53277	PM Enable=3, Disable=0
53279	PM BASE Address (HIGH BYTE)

Note: Numbers in parenthesis following the descriptions are the acceptable range of values.

